```
LLL                III        BBBBBBBBBBBB    RRRRRRRRRRR     TTTTTTTTTTTTTTT    LLL
LLL                IIIIIIIIII  BBBBBBBBBBBB    RRRRRRRRRRR     TTTTTTTTTTTTTTT    LLL
LLL                IIIIIIIII   BBBBBBBBBBBB    RRRRRRRRRRR     TTTTTTTTTTTTTTT    LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLL                III         BBBBBBBBBBBB    RRRRRRRRRRRR          TTT          LLL
LLL                III         BBBBBBBBBBBB    RRRRRRRRRRRR          TTT          LLL
LLL                III         BBBBBBBBBBBB    RRRRRRRRRRRR          TTT          LLL
LLL                III         BBB      BBB    RRR   RRR             TTT          LLL
LLL                III         BBB      BBB    RRR    RRR            TTT          LLL
LLL                III         BBB      BBB    RRR     RRR           TTT          LLL
LLL                III         BBB      BBB    RRR      RRR          TTT          LLL
LLL                III         BBB      BBB    RRR       RRR         TTT          LLL
LLLLLLLLLLLLLLL    III         BBBBBBBBBBBB    RRR       RRR         TTT          LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL    IIIIIIIIII  BBBBBBBBBBBB    RRR       RRR         TTT          LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL    IIIIIIIIII  BBBBBBBBBBBB    RRR       RRR         TTT          LLLLLLLLLLLLLLL
```

```
LL            IIIIII     BBBBBBBB     DDDDDDD         AAAAAA     YY        YY
LL            IIIIII     BBBBBBBB     DDDDDDD         AAAAAA     YY        YY
LL              II       BB      BB   DD      DD      AA    AA   YY        YY
LL              II       BB      BB   DD      DD      AA    AA   YY        YY
LL              II       BB      BB   DD      DD      AA    AA     YY    YY
LL              II       BB      BB   DD      DD      AA    AA     YY    YY
LL              II       BBBBBBBB     DD      DD      AA    AA       YY
LL              II       BB      BB   DD      DD      AAAAAAAAAA     YY
LL              II       BB      BB   DD      DD      AAAAAAAAAA     YY
LL              II       BB      BB   DD      DD      AA    AA       YY          ....
LLLLLLLLLL    IIIIII     BBBBBBBB     DDDDDDD         AA    AA       YY          ....
LLLLLLLLLL    IIIIII     BBBBBBBB     DDDDDDD         AA    AA       YY          ....


LL            IIIIII     SSSSSSSS
LL            IIIIII     SSSSSSSS
LL              II     SS
LL              II     SS
LL              II     SS
LL              II     SS
LL              II       SSSSSS
LL              II       SSSSSS
LL              II             SS
LL              II             SS
LL              II             SS
LL              II             SS
LLLLLLLLLL    IIIIII     SSSSSSSS
LLLLLLLLLL    IIIIII     SSSSSSSS
```

LIB$DAY
1-002

F 7
- Get number of days since zero date   15-SEP-1984 23:55:05   VAX/VMS Macro V04-00   Page   1
                                           6-SEP-1984 11:05:13   [LIBRTL.SRC]LIBDAY.MAR;1   (1)

```
0000        1            .TITLE  LIB$DAY - Get number of days since zero date
0000        2            .IDENT  /1-002/                        ; File: LIBDAY.MAR
0000        3
0000        4    ;
0000        5    ;********************************************************************
0000        6    ;*                                                                  *
0000        7    ;*   COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                        *
0000        8    ;*   DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.         *
0000        9    ;*   ALL RIGHTS RESERVED.                                           *
0000       10    ;*                                                                  *
0000       11    ;*   THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED  *
0000       12    ;*   ONLY IN  ACCORDANCE WITH  THE  TERMS  OF  SUCH  LICENSE  AND WITH THE  *
0000       13    ;*   INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER  *
0000       14    ;*   COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY  *
0000       15    ;*   OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY  *
0000       16    ;*   TRANSFERRED.                                                   *
0000       17    ;*                                                                  *
0000       18    ;*   THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE  *
0000       19    ;*   AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT  *
0000       20    ;*   CORPORATION.                                                   *
0000       21    ;*                                                                  *
0000       22    ;*   DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS  *
0000       23    ;*   SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.        *
0000       24    ;*                                                                  *
0000       25    ;*                                                                  *
0000       26    ;********************************************************************
0000       27    ;
0000       28    ;
0000       29    ;++
0000       30    ; FACILITY: General Utility Library
0000       31    ;
0000       32    ; ABSTRACT:
0000       33    ;
0000       34    ; LIB$DAY returns a longword integer containing the number of days
0000       35    ; since the system zero date of November 17, 1858.  This is useful
0000       36    ; for keeping track of transaction dates, for the values can be
0000       37    ; easily subtracted and compared, unlike ASCII date formats.
0000       38    ;
0000       39    ; ENVIRONMENT: User Mode, AST Reentrant
0000       40    ;
0000       41    ;--
0000       42    ; AUTHOR: Steven B. Lionel, CREATION DATE: 04-April-1979
0000       43    ;
```

```
0000     45                    .SBTTL  Edit History
0000     46    ;
0000     47    ; 1-001 - Original.  SBL 04-Apr-1979
0000     48    ; 1-002 - Return day number explicitly, to conform with LIB$ standard.
0000     49    ;          Add day_time result.  SBL 28-Jun-1979
0000     50
```

```
                        0000          52              .SBTTL  DECLARATIONS
                        0000          53      ;
                        0000          54      ; INCLUDE FILES:
                        0000          55      ;
                        0000          56
                        0000          57      ;
                        0000          58      ; EXTERNAL DECLARATIONS:
                        0000          59      ;
                        0000          60              .DSABL  GBL                     ; Prevent undeclared
                        0000          61                                             ; symbols from being
                        0000          62                                             ; automatically global.
                        0000          63              .EXTRN  SS$_INTOVF              ; Integer overflow
                        0000          64
                        0000          65      ;
                        0000          66      ; MACROS:
                        0000          67      ;
                        0000          68
                        0000          69      ;
                        0000          70      ; EQUATED SYMBOLS:
                        0000          71      ;
                        0000          72
                        0000          73      ;+
                        0000          74      ; Stack offsets for local values:
                        0000          75      ;-
          00000000      0000          76              SYSTIM = 0                      ; System quadword time
          00000008      0000          77              YEAR = 8                        ; Year number (not used)
          0000000A      0000          78              MONTH = 10                      ; Month number (not used)
          0000000C      0000          79              DAY = 12                        ; Day number (not used)
          0000000E      0000          80              HOUR = 14                       ; Hour  of day
          00000010      0000          81              MINUTE = 16                     ; Minute of hour
          00000012      0000          82              SECOND = 18                     ; Second of minute
          00000014      0000          83              HUNDREDTHS = 20                 ; Hundredths of seconds
                        0000          84
                        0000          85      ;
                        0000          86      ; OWN STORAGE:
                        0000          87      ;
                        0000          88
                        0000          89      ;
                        0000          90      ; PSECT DECLARATIONS:
                        0000          91      ;
          00000000      92              .PSECT _LIB$CODE PIC, USR, CON, REL, LCL, SHR, -
                        0000          93                      EXE, RD, NOWRT, LONG
                        0000          94
```

LIB$DAY
1-002

I 7
- Get number of days since zero date   15-SEP-1984 23:55:05   VAX/VMS Macro V04-00   Page 4
LIB$DAY - Return day number as a longwor   6-SEP-1984 11:05:13   [LIBRTL.SRC]LIBDAY.MAR;1   (4)

```
                              0000      96              .SBTTL  LIB$DAY - Return day number as a longword integer
                              0000      97  ;++
                              0000      98  ; FUNCTIONAL DESCRIPTION:
                              0000      99  ;
                              0000     100  ;       LIB$DAY is a routine which returns the number days
                              0000     101  ;       since the system zero date of November 17, 1858.  Optionally,
                              0000     102  ;       the caller can supply a quadword by reference containing a
                              0000     103  ;       time in system time format to be used instead of the system
                              0000     104  ;       time.
                              0000     105  ;
                              0000     106  ;       An optional return argument is a longword integer containing
                              0000     107  ;       the number of 10 millisecond units since midnight.
                              0000     108  ;
                              0000     109  ;       Day zero is November 17, 1858.
                              0000     110  ;
                              0000     111  ;       NOTE:  If the caller supplies a quadword time, it is not
                              0000     112  ;       verified at all.  If it is negative (bit 63 on), the day_number
                              0000     113  ;       value returned will be negative.
                              0000     114  ;
                              0000     115  ; CALLING SEQUENCE:
                              0000     116  ;
                              0000     117  ;       status.wlc.v = LIB$DAY (day_number.wl.r, [user_time.rq.r
                              0000     118  ;                                     [, day_time.wl.r]])
                              0000     119  ;
                              0000     120  ; INPUT PARAMETERS:
                              0000     121  ;
                    00000008  0000     122  ;       user_time = 8                   ; Optional.  A quadword containing
                              0000     123  ;                                       ; a time in 10 microsecond units.
                              0000     124  ;                                       ; If omitted, the current system
                              0000     125  ;                                       ; time will be used.
                              0000     126  ;                                       ; One way for FORTRAN programmers to
                              0000     127  ;                                       ; provide a quadword is to declare:
                              0000     128  ;                                       ;     INTEGER*4 TIME(2)
                              0000     129  ;
                              0000     130  ; IMPLICIT INPUTS:
                              0000     131  ;
                              0000     132  ;       NONE
                              0000     133  ;
                              0000     134  ; OUTPUT PARAMETERS:
                              0000     135  ;
                    00000004  0000     136  ;       day_number = 4                  ; A longword integer containing the
                              0000     137  ;                                       ; number of days since the system
                              0000     138  ;                                       ; zero date.
                    0000000C  0000     139  ;       day_time = 12                   ; The number of 10 millisecond (.01 second)
                              0000     140  ;                                       ; units since midnight.
                              0000     141  ;
                              0000     142  ;
                              0000     143  ; IMPLICIT OUTPUTS:
                              0000     144  ;
                              0000     145  ;       NONE
                              0000     146  ;
                              0000     147  ; COMPLETION CODES:
                              0000     148  ;
                              0000     149  ; SS$_NORMAL - Successful completion.
                              0000     150  ; SS$_INTOVF - The optional argument user_time is present and represents
                              0000     151  ;              a date past the year 8600.
                              0000     152  ;
```

LIBSDAY
1-002
J 7
- Get number of days since zero date   15-SEP-1984 23:55:05   VAX/VMS Macro V04-00   Page 5
LIBSDAY - Return day number as a longwor 6-SEP-1984 11:05:13 [LIBRTL.SRC]LIBDAY.MAR;1   (4)

```
                              0000   153  ;--
                              0000   154
                    4000      0000   155            .ENTRY LIBSDAY , ^M<IV>         ; Entry point
                              0002   156
          5E   18   C2        0002   157            SUBL2   #24, SP                 ; Create quadword block for
                              0005   158                                            ; system time plus result block
                              0005   159                                            ; for $NUMTIM.
          02   6C   91        0005   160            CMPB    (AP), #<user_time/4>    ; Optional arg present?
               0B   19        0008   161            BLSS    10$                     ; No
          08   AC   D5        000A   162            TSTL    user_time(AP)           ; Omitted by reference?
               06   13        000D   163            BEQL    10$                     ; Yes
     6E   08   BC   7D        000F   164            MOVQ    @user_time(AP), SYSTIM(SP)  ; Get user supplied time
               0C   11        0013   165            BRB     20$                     ; Don't get system time
                              0015   166
                              0015   167  10$:      $GETTIM_S          SYSTIM(SP)   ; Get system time
          73   50   E9        001E   168            BLBC    R0, ERROR               ; Should NEVER happen, but
                              0021   169                                            ; is good practice to check.
                              0021   170
51   50   6E   3B9ACA00 BF    7B 0021  171  20$:    EDIV    #1000000000, (SP), R0, R1  ; Convert to number of days.
     04 BC  50  00000360 BF   C7 002A  172          DIVL3   #864, R0, @day_number(AP)   ; and store.
               03   6C   91        0033  173          CMPB    (AP), #<day_time/4>     ; Day time requested?
                    51   19        0036  174          BLSS    EXIT                    ; No
               0C   AC   D5        0038  175          TSTL    day_time(AP)            ; Omitted by reference?
                    4C   13        003B  176          BEQL    EXIT                    ; Yes
               04   AE   D5        003D  177          TSTL    SYSTIM+4(SP)            ; Is system time negative?
                    10   18        0040  178          BGEQ    30$                     ; No
          6E   6E   D2        0042  179          MCOML   SYSTIM(SP), SYSTIM(SP)      ; Yes, force it positive
     04 AE  04 AE  D2        0045  180          MCOML   SYSTIM+4(SP), SYSTIM+4(SP)
               6E   D6        004A  181          INCL    SYSTIM(SP)
          04 AE  00  D8      004C  182          ADWC    #0, SYSTIM+4(SP)
               3B   1D        0050  183          BVS     OVFLO                   ; Overflow?
          50   5E   D0        0052  184  30$:    MOVL    SP, R0                  ; Save stack pointer
                              0055  185          $NUMTIM_S          YEAR(R0), SYSTIM(R0)    ; Get numeric time
               30   50   E9        0061  186          BLBC    R0, ERROR               ; Error?
                    50   7C        0064  187          CLRQ    R0                      ; Find time in units of .01 secs
     50   0E AE  3C  A5        0066  188          MULW3   #60, HOUR(SP), R0
          50   10 AE  A0        006B  189          ADDW2   MINUTE(SP), R0          ; R0 has minutes
          50   3C   C4        006F  190          MULL2   #60, R0
          51   12 AE  B0        0072  191          MOVW    SECOND(SP), R1
          50   51   C0        0076  192          ADDL2   R1, R0                  ; R0 has seconds
     50  00000064 BF  C4      0079  193          MULL2   #100, R0
          51   14 AE  B0        0080  194          MOVW    HUNDREDTHS(SP), R1
     0C BC  50  51  C1        0084  195          ADDL3   R1, R0, @day_time(AP)   ; store .01 seconds
                              0089  196
                              0089  197  EXIT:
          50   01   D0        0089  198          MOVL    #1, R0                                  ; Return with SS$_NORMAL
               04            008C  199          RET
                              008D  200
                              008D  201  OVFLO:
     50  00000000'8F  D0      008D  202          MOVL    #SS$_INTOVF, R0                         ; Return with error status
                              0094  203  ERROR:
               04            0094  204          RET                                              ; Return with error status
                              0095  205          .END
```

```
DAY_NUMBER      = 00000004
DAY_TIME        = 0000000C
ERROR             00000094  R      01
EXIT              00000089  R      01
HOUR            = 0000000E
HUNDREDTHS      = 00000014
LIB$DAY           00000000  RG     01
MINUTE          = 00000010
OVFLO             0000008D  R      01
SECOND          = 00000012
SS$_INTOVF        ********    X    00
SYS$GETTIM        ********  G      01
SYS$NUMTIM        ********  G      01
SYSTIM          = 00000000
USER_TIME       = 00000008
YEAR            = 00000008
```

```
                              +-----------------+
                              ! Psect synopsis !
                              +-----------------+

PSECT name                       Allocation          PSECT No.   Attributes
----------                       ----------          ---------   ----------
.  ABS  .                        00000000  (    0.)  00 (  0.)   NOPIC  USR  CON  ABS  LCL  NOSHR  NOEXE  NORD  NOWRT  NOVEC  BYTE
_LIB$CODE                        00000095  (  149.)  01 (  1.)   PIC    USR  CON  REL  LCL  SHR    EXE    RD    NOWRT  NOVEC  LONG
```

```
                              +------------------------+
                              ! Performance indicators !
                              +------------------------+

Phase                    Page faults    CPU Time        Elapsed Time
-----                    -----------    --------        ------------
Initialization                   29    00:00:00.04      00:00:03.70
Command processing              114    00:00:00.31      00:00:03.99
Pass 1                          106    00:00:00.49      00:00:06.84
Symbol table sort                 0    00:00:00.01      00:00:00.01
Pass 2                           51    00:00:00.28      00:00:03.17
Symbol table output               3    00:00:00.01      00:00:00.02
Psect synopsis output             2    00:00:00.01      00:00:00.01
Cross-reference output            0    00:00:00.00      00:00:00.00
Assembler run totals            307    00:00:01.15      00:00:17.74
```

The working set limit was 1050 pages.
3174 bytes (7 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 18 non-local and 3 local symbols.
205 source lines were read in Pass 1, producing 11 object records in Pass 2.
3 pages of virtual memory were used to define 3 macros.

```
                              +--------------------------+
                              ! Macro library statistics !
                              +--------------------------+

Macro library name                       Macros defined
------------------                       --------------
_$255$DUA28:[SYSLIB]STARLET.MLB;2               3
```

18 GETS were required to define 3 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS$:LIBDAY/OBJ=OBJ$:LIBDAY MSRC$:LIBDAY/UPDATE=(ENH$:LIBDAY)

LIBCVTTPU
LIS

LIBCVTUO
LIS

LIBDECOVE
LIS

LIBDAY
LIS

LIBCVTOU
LIS

LIBCVTPTU
LIS

LIBCVTTPO
LIS

LIBDECODF
LIS

LIBDOCOM
LIS

LIBCVTTPZ
LIS

LIBDATETI
LIS

LIBDELETE
LIS

LIBCVTPTO
LIS

LIBDAYWK
LIS

LIBCVTPTZ
LIS